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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,998	05/29/2001	Charles A. Shermer	W2K1004	7360

23504 7590 12/15/2003

WEISS & MOY PC
4204 NORTH BROWN AVENUE
SCOTTSDALE, AZ 85251

EXAMINER

NGUYEN, DILINH P.

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 12/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/867,998

Applicant(s)

SHERMER, CHARLES A.

Examiner

DiLinh Nguyen

Art Unit

2814

-- Th MAILING DATE of this communication app ars on the cover sh et with th corr spond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,10-14 and 24-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,10-14 and 24-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1, 5, 7- 8, 10-11, 13-14 and 24-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakashima et al. (U.S. Pat. 6388311).

- Regarding claims 1, 8, 10, 14 and 24-26, Nakashima et al. disclose a

semiconductor device (figs. 3C) comprising:

a lead frame having a die flag area 4;

a die 5 coupled to the die flag area;

a plurality of channels 4A formed on a top surface of the die flag area;

wherein the at least one channel is formed on a metal portion on the die attach surface of the die flag area;

a mold compound 2 for encapsulating the semiconductor assembly wherein the mold compound flows into the plurality of channels and bonds with the plurality of channels forming a lock between the mold compound and the die flag area to prevent delamination of the semiconductor assembly;

at least one raised wire bonding area 3 on the die flag area having a wire W connected thereto wherein the at least one raised wire bonding area allows the mold compound to flow underneath the wire.

- Regarding claims 5 and 13, Nakashima et al. disclose plurality of channels is U shaped.
- Regarding claim 7, Nakashima et al. disclose the plurality of channels is formed by etching the lead frame (column 3, lines 15-18).

Additionally, the process limitation "the at least channel is formed by etching the leadframe" in claim 7, do not carry weight in a claim drawn to structure. In re Thorpe, 277 USPQ 964 (Fed. Cir. 1985).

- Regarding claim 27, Nakashima et al. disclose the plurality of channels is formed by stamping and coining the leadframe (column 3, lines 19-22).
- Regarding claim 11, Nakashima et al. disclose a semiconductor die 5 is coupled to a central region of the die flag area, the at least one channel located peripherally to where the semiconductor die is coupled and the at least one raised bonding area is peripherally located to the at least one channel.
- Regarding claim 28, Nakashima et al. disclose the means is formed by etching the leadframe (column 3, lines 15-18).
- Regarding claim 29, Nakashima et al. disclose the semiconductor die 5 is coupled to a central region of the die attached surface and the locking means 4A are located peripherally to the semiconductor die.

- Regarding claim 30, Nakashima et al. disclose the wirebonding means are located peripherally to the locking means.
- Regarding claim 31, Nakashima et al. disclose the wirebonding means are located peripherally to the semiconductor die.

3. Claims 8 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Choi (U.S. Pat. 6437427).

Choi discloses a semiconductor device (cover fig.) comprising:

a lead frame 2 having a die flag area;

at least one channel 9 formed on a die attach surface of the die flag area wherein the at least one channel prevents delamination of the semiconductor package by allowing a mold compound 6 to flow into the at least one channel; and wherein the at least one channel is formed on a metal portion on the die attach surface of the die flag area.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4, 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. in view of Nakamichi (U.S. Pat. 6127206).

Nakashima discloses the claimed invention except for not point out that the grooves are triangle shaped and the grooves are formed by stamping and coining.

Nakamichi discloses the lead 16 is formed with a groove 18, wherein the groove 18 has a "V" shaped in cross section (fig. 2, column 5, lines 1-5) and wherein the groove is formed by coining (column 6, lines 54-59) to increase the lead bonding strength and prevent the lead from being pulled out of the encapsulation (column 5, lines 12-15 and 6, lines 47-48). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Nakashima et al. to increase the lead bonding strength and prevent the lead from being pulled out of the encapsulation, as shown by Nakamichi.

- Regarding claim 6, Nakashima et al. discloses the plurality of channels is formed by stamping and coining the lead frame (column 3, lines 19-22).

Additionally, the process limitation "the at least channel is formed by stamping, coining and etching the leadframe" in claim 6, do not carry weight in a claim drawn to structure. In re Thorpe, 277 USPQ 964 (Fed. Cir. 1985).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

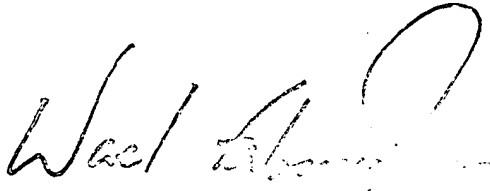
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

DLN
December 10, 2003


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